

## REMARKS

This Preliminary Amendment has been made to remove all references to Fig. 4A in the specification. No new matter has been added. Entry of the above Preliminary Amendment is respectfully requested prior to examination of this application.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this would expedite the prosecution of the application for all concerned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'A. A. Collins', with a long horizontal flourish extending to the right.

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EXPRESS MAIL CERTIFICATE

Date 1/4/02 Label No. EL 767721851 *us*

I hereby certify that, on the date indicated above, this paper or fee was deposited with the U.S. Postal Service and that it was addressed for delivery to the Assistant Commissioner for Patents, Washington, DC 20231 by "Express Mail Post Office to Addressee" service.

Name (Print) D. LULLO

Signature D. LULLO

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PATENT TRADEMARK OFFICE

Docket No: 2640/1G820-US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Eitan T. WIENER

Serial No.: 09/975,127 Art Unit: 3731

Confirmation No.: 1298

Filed: October 10, 2001

Examiner: not yet assigned

For: APPARATUS AND METHOD FOR ALERTING GENERATOR FUNCTIONS IN AN  
ULTRASONIC SURGICAL SYSTEM

**Box Non-Fee Amendment**

Assistant Commissioner for Patents  
Washington, DC 20231

**MARK UP OF PRELIMINARY AMENDMENT OF JANUARY 4, 2002**

**IN THE SPECIFICATION:**

Page 11, delete the forth paragraph:

[FIG. 4A is a schematic illustration of transducer drive circuitry of a power transformer 86  
of FIG. 3B;]

Page 18, delete the last full paragraph and insert the following new paragraph:

[FIG. 4A is a schematic illustration of] The transducer drive circuitry of [a] power transformer 86 [of] shown in FIG. 3B[. The transducer is] may be represented by an equivalent electrical circuit [with The] having components  $C_o$ ,  $L_s$ ,  $C_s$ , and  $R_s$  which form a transducer equivalent circuit  $T_{equiv}$ , where  $C_o$  is a shunt capacitance and represents the electrical capacitance of the piezoelectric elements of the piezoelectric transducer 36 shown in FIG. 2.

Page 19, delete the entire page 19 and insert the following new page 19:

$L_s$ ,  $C_s$  and  $R_s$  [are] form an electrical equivalent of the overall mechanical system and collectively represent the mechanical branch.  $L_s$  is the effective mass of the system,  $C_s$  is the effective compliance and  $R_s$  represents mechanical losses associated with friction, internal material dissipation and/or the power delivered to the tissue.

An Inductor  $L_t$  is also provided and is matched to the shunt capacitance  $C_o$  at the resonance of the ultrasonic system, such as approximately 55.5 kHz. Hence,  $L_t$  and  $C_o$  electrically cancel each other at the resonant frequency. As a result, all of the drive current will flow through the mechanical branch. This helps to ensure that the ultrasonic excursion of the transducer is primarily proportional to the drive current.

[The two] Two resistors  $R_p/2$  sum in series to a resistance of  $R_p$ . This resistance helps to establish an upper limit of the overall impedance of the output circuit, and also establishes an upper limit for the drive voltage. In preferred embodiments,  $R_p$  is a relatively large resistance. At resonance, the parallel combination of  $R_p$  and  $R_s$  is effectively  $R_s$ , because  $R_s$  is much smaller than  $R_p$ , even when coagulating and cutting tissue.

A [The] series combination of capacitors Cv1 and Cv2 is used to form[s] a voltage divider. Together these capacitors reduce the high voltage that typically drives the transducer to a level which is appropriate for signal processing by integrated circuits (not shown). A transformer Vt couples the reduced voltage to the feedback circuitry (voltage sense 92 of FIG. 3B) and also provides isolation between the drive circuitry and the other circuitry of the generator.

A small voltage drop is provided across [the] a series combination of resistors R3 and R4. In the preferred embodiment, the series combination is a relatively low

Page 20, delete the second full paragraph and insert the following new paragraph:

A pair of resistors R1 [and], R2 [are] is used to establish a minimum impedance level to the control circuitry for use in the control algorithms. The resistance is divided between [the] two output arms Vout1, Vout2 of the power transformer to help mitigate electromagnetic radiation and leakage current.

Respectfully submitted,



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